## REMARKS

This paper is filed in response to the final Office action mailed June 5, 2003, in which all of claims 1-7 on file are rejected. With this paper, claim 1 is amended as required by the Office action, but no other changes are made to the claims, and so claims 1-7 remain in the application.

## Request for response by the Examiner to proposed drawing change

A proposed drawing change correcting a typographical error in Fig. 3 was filed with the response to the previous Office action, and applicant does not see on the record where the Examiner has indicated whether the proposed drawing change is acceptable, and so applicant respectfully requests such an indication or apologizes if the Examiner has already indicated whether the changes are acceptable.

## Rejections under 35 USC §112, first paragraph

At paragraph 3 of the Office action, claim 1 is again rejected under 35 U.S.C. §112, first paragraph, this time because according to the Office action, "the specification, while being enabling for making a permanent-type connection for the control element or the monitoring element thereby to specialize the general purpose query protocol, does not reasonably provide enablement for being used by [an] industrial control system [ICS] in performing frequent communication of control and monitoring information between the controller [of the ICS] and [a] control element or [a] monitoring element." Applicant respectfully points out that what the Office action is asserting is non-enabled is not a step or element of the invention (and the Office action concedes that the elements/ steps of the invention are enabled) but is instead the result of using the invention (a method by which to adapt/ specialize a general purpose query protocol, or in other words a general purpose off-the shelf type of network such as Ethernet, for use by an industrial control system). In other words, the invention adapts (or in other words specializes or particularizes) a general purpose query protocol for use by an ICS, and once so adapted, the protocol can then be used to perform frequent communication of control and monitoring information between the controller of the ICS and a control element or a monitoring element. Moreover, as explained in the specification in the background section, a general purpose query protocol could be used to perform frequent (but perhaps not frequent enough) communication of control and monitoring information between the controller of the ICS

5

and a control element or a monitoring element without practicing the invention (i.e. without adapting the protocol to the ICS as recited in claim 1 and the other claims of the application), but the result would likely be unsatisfactory. In case the general purpose query protocol is MODBUS/TCP (which is used as an example in the application), the referred to communication is specified by the Open MODBUS/TCP Specification, Release 1.0, which is incorporated into the application by reference (at page 9, line 11).

Applicant respectfully submits that it is thus demonstrated that any person skilled in the art to which it pertains, and so familiar with the open MODBUS specification, would be able to make and use the invention as claimed in claim 1. Accordingly, applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. §112, first paragraph, be reconsidered and withdrawn.

## Rejections under 35 USC §112, second paragraph

At paragraph four of the Office action, claim 1 is rejected under 35 U.S.C. §112, second paragraph for labeling the one and only step of claim 1 as step "a)". With this amendment, claim 1 is changed so as not have a label. Accordingly, applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. §112, second paragraph, be withdrawn.

## Claim rejections under 35 U.S.C. §103

At paragraph five of the Office action, claims 1-4 are rejected under 35 U.S.C. §103 as being unpatentable over Crater *et al.* (U.S. Pat. No. 5,805,442).

In making the rejection, the Office action asserts that Crater *et al.* teaches "making a permanent-type connection to the network I/O device for the control element or for the monitoring element based on an analysis of communication transactions between the controller and the control element or the monitoring element," citing Col. 6, lines 38-58 and 61-67, and Col. 8, lines 4-6 and 13-16. Applicant respectfully submits that what is disclosed at the cited locations has nothing to do with making a permanent-type connection to the network I/O device for the control element or the monitoring element

*based on an analysis of communication transactions between the controller and the control element or the monitoring element.* By basing whether or not to make a permanent-type connection on an analysis of communication transactions between the controller and the control element or the monitoring element, a general purpose query protocol is (at least partially) adapted for use by an industrial control system (and the application describes and claims other steps that can be taken to so adapt a general purpose query protocol), and there is no teaching or suggestion in Crater *et al.* of either adapting a general purpose query protocol for use by an industrial control system in any respect, and certainly not in respect to selecting to make some connections permanent-type connections based on an analysis of communication transactions between the controller and the control element or the monitoring element. The adaptation of an off-the-shelf network (such as Ethernet) by selecting whether or not to make permanent-type connections based on an analysis of communication transactions between the controller and the control element or the monitoring element is explained in the specification beginning at the bottom of page 11 (at line 26). (All of the four different actions that can be taken according to the invention for adapting a general purpose query protocol for use by industrial control system--including selecting to make some connections permanent-type connections--are provided in the description beginning at page 11, line 26, and continuing to page 14, line 19.)

It is not surprising that Crater *et al.* does not provide at the cited location (or anywhere else) a teaching or suggestion of how to adapt a general purpose query protocol for use by an industrial control system, since Crater *et al.* explains at Col. 2, line 40, that it is directed to providing a system that "utilizes the capabilities of the Internet and, more particularly, the interactive capabilities made available by resources such as the worldwide web to shift the burden of providing user interfaces for changing forms of data from monitoring computers to the controllers that actually gather and report the data." There is simply no indication of even the need to use a general purpose query protocol (such as TCT/IP over Ethernet) for communication between a PLC (as an example of a controller) and a control element (actuator) or monitoring element (sensor) of an
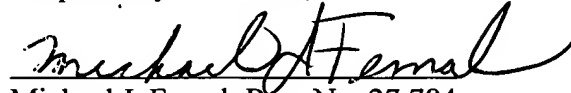
7

industrial control system. More specifically, and as clear from the cited passages of

Crater *et al.*, Crater *et al.* does not even discuss the use of a general purpose query

protocol for communication between a controller and a control or monitoring element

(noting that the controller of claim 1 corresponds to what in Crater *et al.* is indicated as

CPU 12 and noting that the I/O devices $20_1$ $20_2$ of Crater *et al.* either include a control

element (actuator) or monitoring element (sensor) indicated in Fig. 1 and recited in claim

1 of the application or are communicatively coupled to such elements), but instead

indicates only the use of an Ethernet for networking computers to which the network

interface 30 in Fig. 1 of Crater *et al.* is connected, computers which are not shown in Fig.

1--i.e. none of the entities shown in Fig. 1 are even indicated to be networked by an

Ethernet or other general purpose off-the-shelf network, let alone a general purpose off-

the-shelf network that has been adapted for use by an ICS. Therefore, there is not even

the teaching or suggestion of the use of a general purpose query protocol for

communication between a controller (such as a PLC) and a network I/O device for a

control or monitoring element, let alone the adaptation as recited in claim 1 (i.e. an

adaptation made at least in part by selecting to make some connections permanent-type

connections based on an analysis ...) of a general purpose query protocol for such

communication (i.e. between the controller/ PLC and a network I/O device of an ICS).

Accordingly, applicant respectfully requests that the rejections under 35 USC

§103 of claim 1, and of all the other claims so rejected since all the other claims of the

application depend from claim 1, be reconsidered and withdrawn.

## CONCLUSION

For all the foregoing reasons it is believed that claims 1-7 are in condition for allowance and an early and favorable action to that end is requested.

Respectfully submitted,

Michael J. Femal, Reg. No. 27,784
Attorney for Applicants

SQUARE D COMPANY
1415 South Roselle Road
Palatine, Illinois 60067
Telephone: 847/925-3452
Facsimile: 847/925-7419